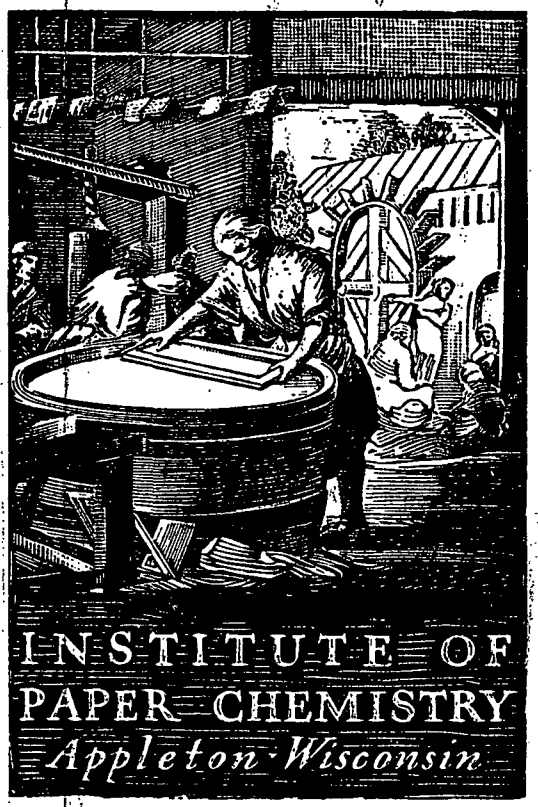

CONTINUOUS BASE-LINE STUDY

Project 1108-13

Report 183

A Progress Report

to

FOURDRINIER KRAFT BOARD INSTITUTE, INC.

June 1, 1963

THE INSTITUTE OF PAPER CHEMISTRY

Appleton, Wisconsin

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June 1, 1963

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THE INSTITUTE OF PAPER CHEMISTRY

Appleton, Wisconsin

CONTINUOUS BASE-LINE STUDY

INTRODUCTION

As requested by the Technical Committee of the Fourdrinier Kraft Board Institute, Inc., the reports pertinent to the continuous base-line study on 42-lb. fourdrinier kraft linerboard are now being prepared by The Institute of Paper Chemistry on a bimonthly basis instead of the previous monthly basis. This new system was initiated on August 1, 1961. This report is the eleventh under the new system and presents results obtained during the months of April and May, 1963.

TABLE I

SUMMARY OF COMPOSITE MILL AVERAGES--APRIL AND MAY, 1963

Mill	Basis Weight, lb.	Caliper, points	Bursting Strength, p.s.i. gage	Elmendorf Tear, g./sheet	
				In Machine	Cross Machine
A	42.5	12.8	112	296	351
B	43.4	12.2	117	314	363
C	42.7	13.1	108	333	387
D	43.9	12.9	113	355	401
E	42.8	12.1	105	307	354
F	42.9	12.1	113	358	400
G	42.8	12.4	108	372	413
H	42.6	11.5	107	369	408
I	42.8	13.1	107	315	358
J	43.0	12.0	114	338	371
K	42.0	12.8	107	375	394
L	42.2	13.0	114	279	330
M	42.0	12.5	102	336	376
N	No samples submitted.				
O	42.8	13.0	112	337	392
P	No samples submitted.				
Q	No samples submitted.				
S	42.7	13.7	113	301	356
T	43.5	13.5	114	333	364
U	42.3	12.2	106	308	360
V	42.9	12.7	110	332	387
W	42.9	13.0	108	369	392
Current FKI average:	42.8	12.7	110	333	377
Cumulative FKI average:	42.9	12.7	109	329	375
FKI index, %	99.8	100.0	100.9	101.2	100.5

PRESENTATION AND DISCUSSION OF TEST RESULTS

Each sample lot received for evaluation during April and May was evaluated for basis weight, caliper, bursting strength, and Elmendorf tearing strength. The average strength results for each mill may be seen in Table I and are graphically presented in Fig. 1 to 5. In addition to a comparison of the current mill averages for the various tests, Table I also shows the current F.K.I. averages, the cumulative F.K.I. averages, and F.K.I. indexes. For each test, the current mill average represents the average obtained on all sample lots evaluated during a given period, the current F.K.I. average represents the average of the current mill averages, and the cumulative F.K.I. average represents the average of the current F.K.I. averages for the previous twelve months excluding the current period. The F.K.I. index expressed in per cent is the ratio of the current F.K.I. average to the cumulative F.K.I. average.

In Table II, a tabulation of the number of sample lots submitted by each mill during April and May is shown.

Supplementary to the basis weight data given in Table I, a tabulation is given in Table III of the amount by which the basis weight average for each mill varies from the 42-lb. specification set forth in Rule 41.

Shown below from Table I are the maximum and minimum current mill averages for each test and also the current and cumulative F.K.I. averages.

TABLE I

SUMMARY OF COMPOSITE MILL AVERAGES--APRIL AND MAY, 1963

Mill	Basis Weight, lb.	Caliper, points	Bursting Strength, p.s.i. gage	Elmendorf Tear, g./sheet	
				In Machine	Cross Machine
A	42.5	12.8	112	296	351
B	43.4	12.2	117	314	363
C	42.7	13.1	108	333	387
D	43.9	12.9	113	355	401
E	42.8	12.1	105	307	354
F	42.9	12.1	113	358	400
G	42.8	12.4	108	372	413
H	42.6	11.5	107	369	408
I	42.8	13.1	107	315	358
J	43.0	12.0	114	338	371
K	42.0	12.8	107	375	394
L	42.2	13.0	114	279	330
M	42.0	12.5	102	336	376
N	No samples submitted.				
O	42.8	13.0	112	337	392
P	No samples submitted.				
Q	No samples submitted.				
S	42.7	13.7	113	301	356
T	43.5	13.5	114	333	364
U	42.3	12.2	106	308	360
V	42.9	12.7	110	332	387
W	42.9	13.0	108	369	392
Current FKI average:	42.8	12.7	110	333	377
Cumulative FKI average:	42.9	12.7	109	329	375
FKI index, %	99.8	100.0	100.9	101.2	100.5

TABLE II

NUMBER OF SAMPLE LOTS SUBMITTED BY EACH MILL
APRIL AND MAY, 1963

Mill Code	Number of Sample Lots
A	10
B	8
C	7
D	6
E	5
F	7
G	5
H	6
I	10
J	8
K	5
L	9
M	4
N	0
O	8
P	0
Q	0
S	6
T	6
U	16
V	6
W	4
Total	136

TABLE III

PERCENTAGE DEVIATION FROM 42-LB. BASIS WEIGHT SPECIFICATION

Mill Code	Percentage Deviation
A	+1.2
B	+3.3
C	+1.7
D	+4.5
E	+1.9
F	+2.1
G	+1.9
H	+1.4
I	+1.9
J	+2.4
K	0.0
L	+0.5
M	0.0
N	--
O	+1.9
P	--
Q	--
S	+1.7
T	+3.6
U	+0.7
V	+2.1
W	+2.1

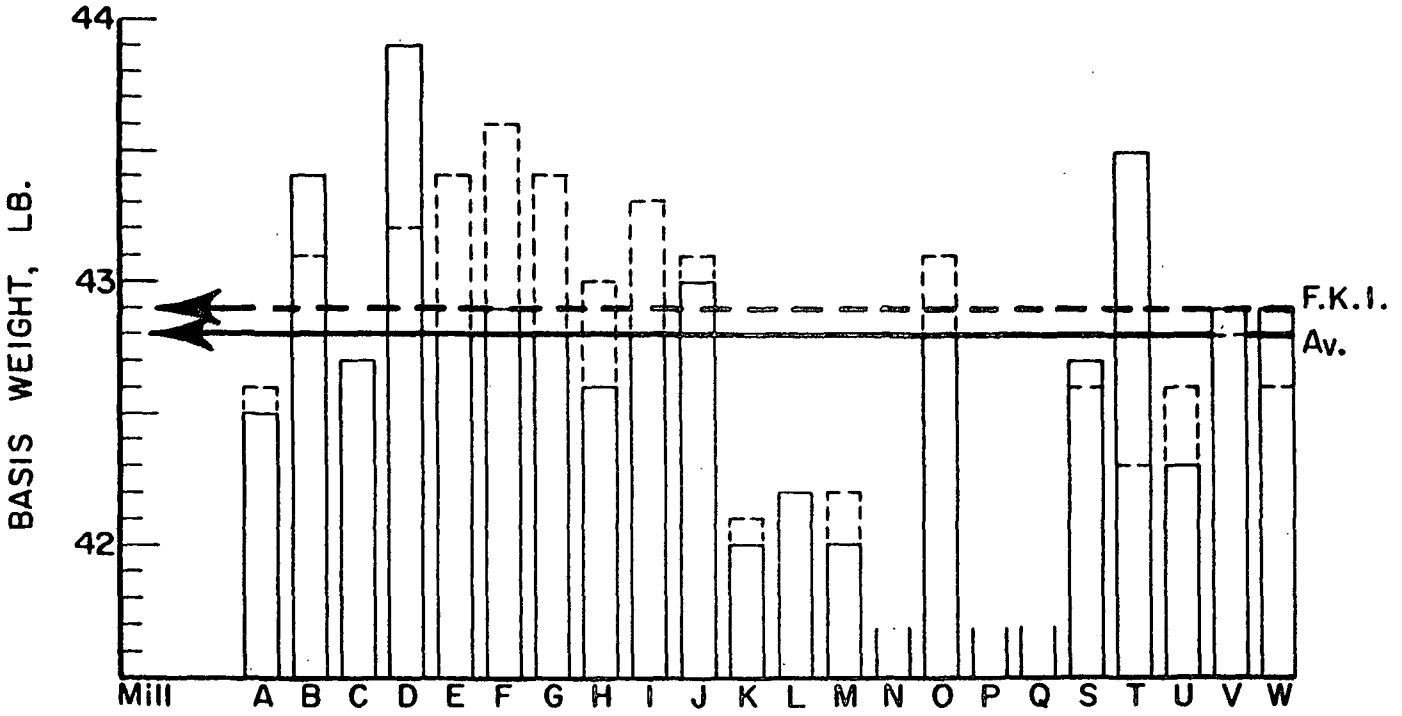

Figure 1. Comparison of Basis Weight Results

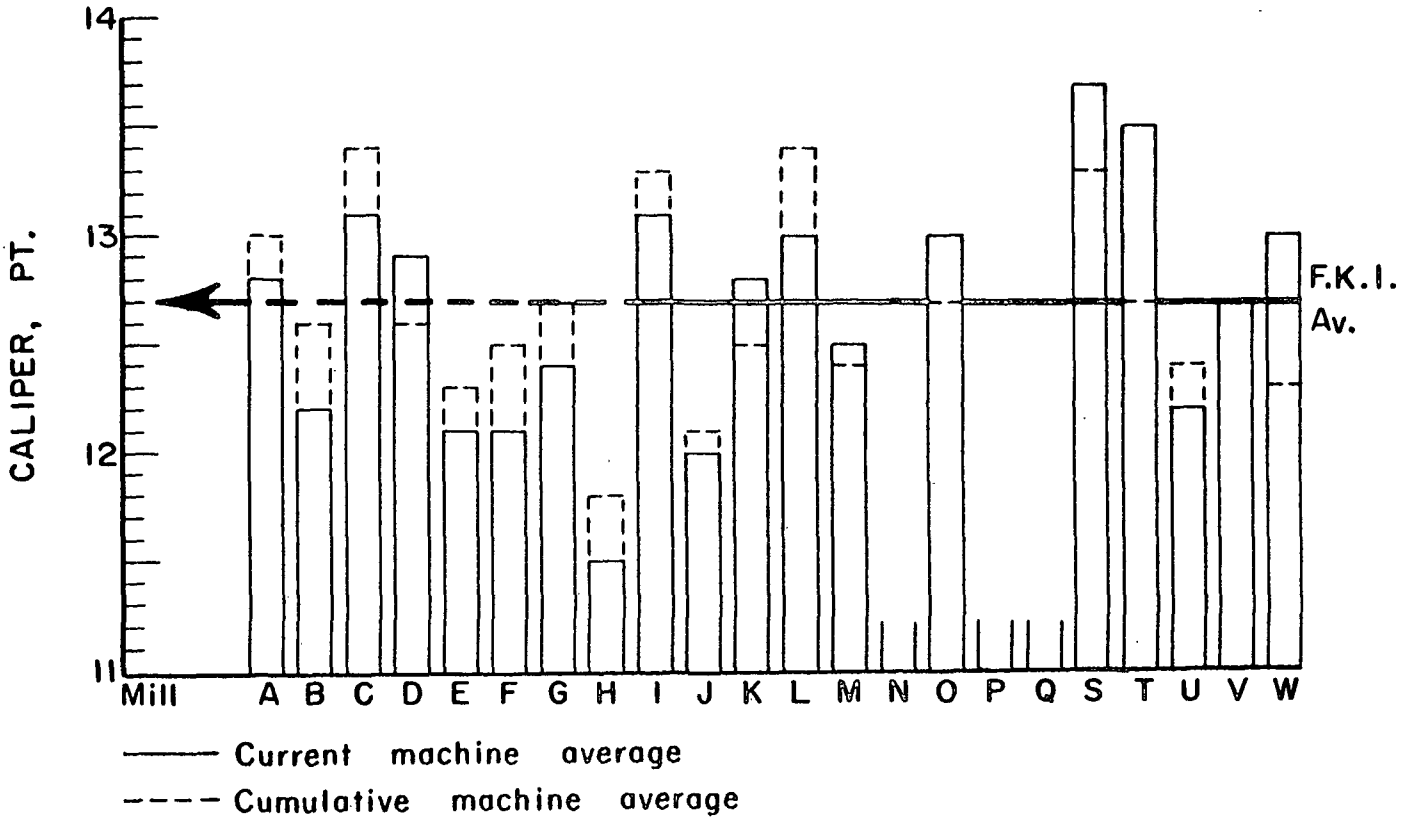

Figure 2. Comparison of Caliper Results

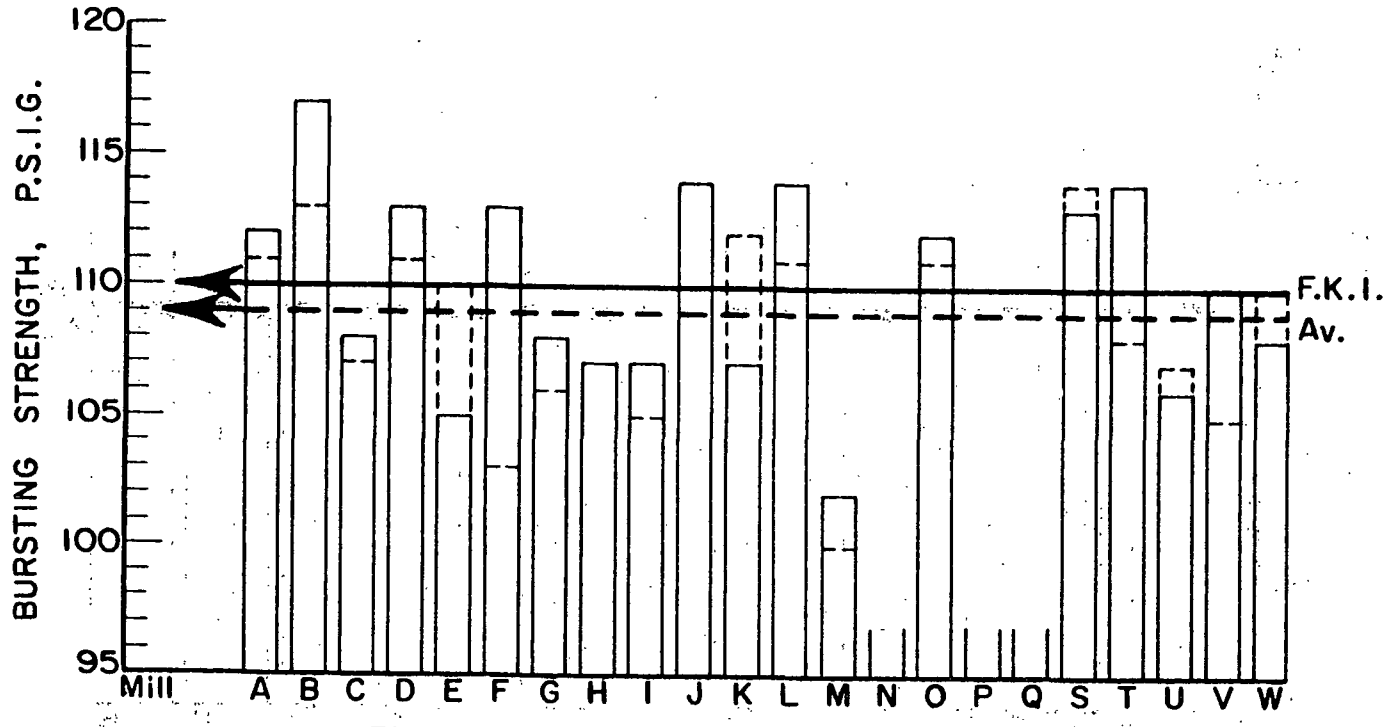

Figure 3. Comparison of Bursting Strength Results

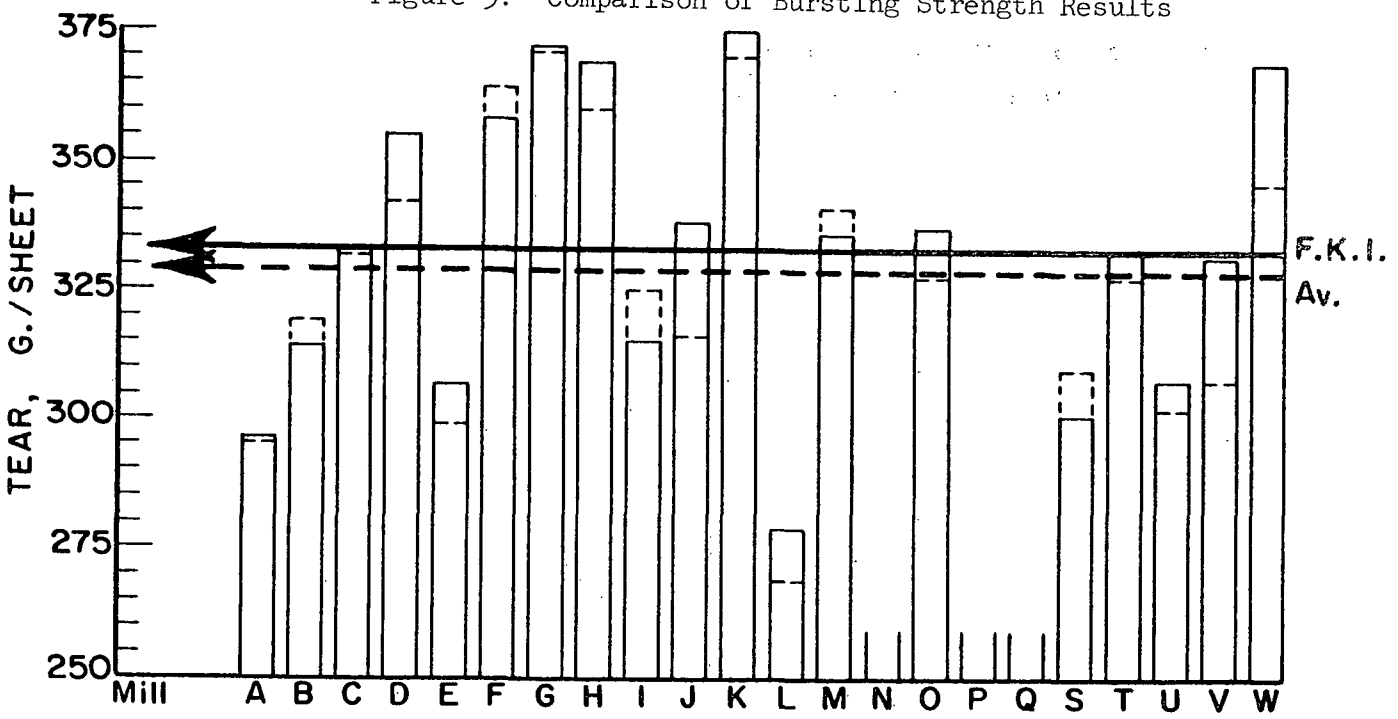

Figure 4. Comparison of Machine-Direction Tear Results

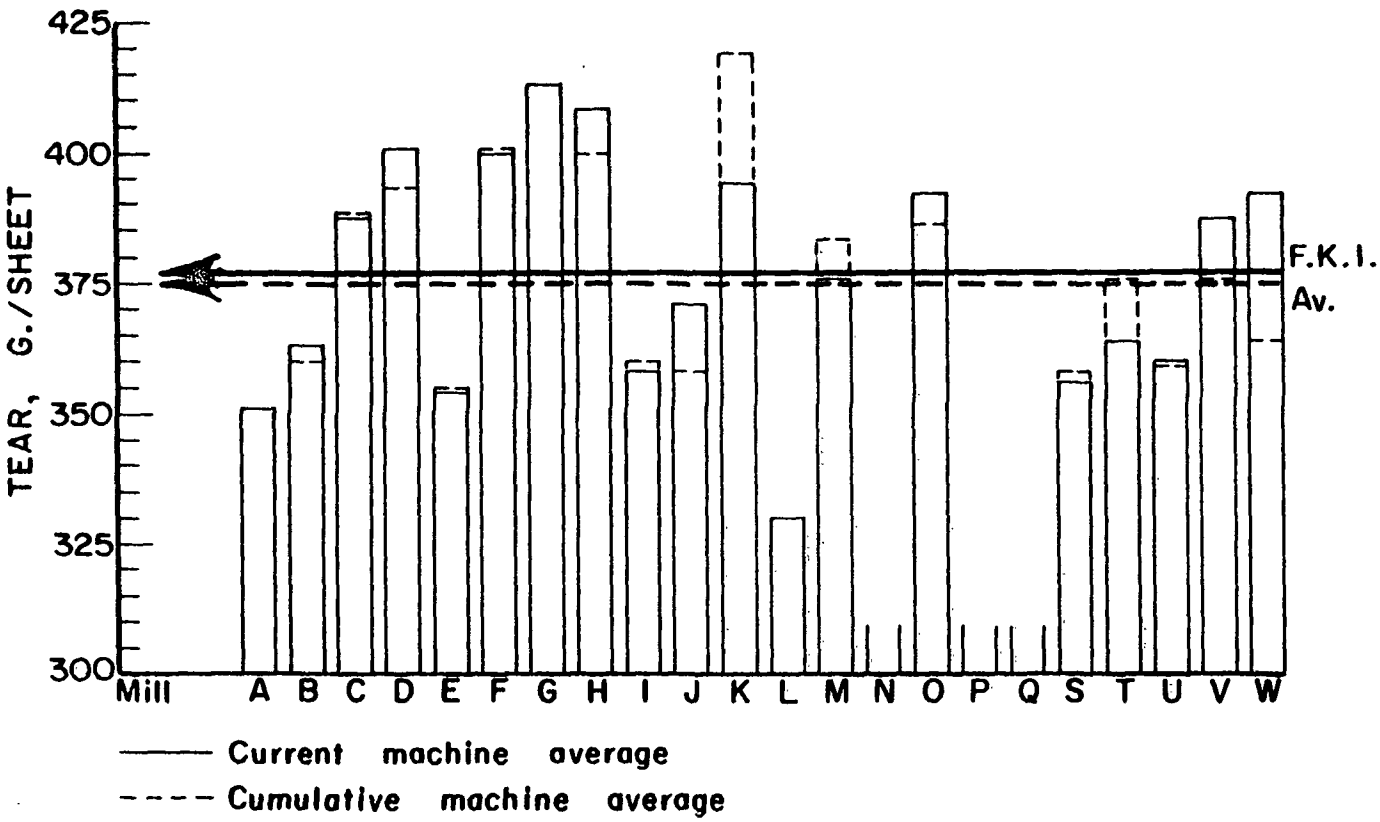

Figure 5. Comparison of Cross-Machine Direction Tear Results

Test	Current Mill Averages Max.	Min.	F.K.I. Averages Current	Cumulative
Basis weight, lb.	43.9	42.0	42.8	42.9
Caliper, points	13.7	11.5	12.7	12.7
Bursting strength, p.s.i. gage	117	102	110	109
Machine direction Elmendorf tear, g./sheet	375	279	333	329
Cross-machine direction Elmendorf tear, g./sheet	413	330	377	375

The test results obtained at the Institute and at the mill during April and May are given alphabetically in Tables IV to XXV for each mill. Included in each of these tables are the maximum, minimum and average test data obtained at the Institute on each sample lot of linerboard. The data obtained at the Institute include also for each test the calculation of (1) a current mill average that represents the mean of the averages obtained on the individual sample lots of linerboard evaluated during the current period, (2) a cumulative mill average that represents the mean of the current mill averages for the previous twelve months excluding the current period, (3) a mill factor expressed in per cent that represents the ratio of the current mill average to the cumulative mill average, and (4) a mill index expressed in per cent that represents the ratio of the current mill average to the cumulative F.K.I. average. The term "mean" in the preceding discussion is synonymous with the simple arithmetic average. As mentioned above, the results presented in Tables IV to XXV also include data obtained at the mills. The mill data include for each test (1) the average result obtained on each sample lot of linerboard and (2) a current mill average (calculated at the Institute) that represents the mean of the average obtained on the individual sample lots of linerboard. In addition to the presentations of Institute

TABLE IV

SUMMARY OF INSTITUTE AND MILL DATA FOR MILL A

April and May, 1963

Date Made	Finish	Mch. No.	Basis Weight, lb.					Caliper, points					Bursting Strength, p.s.i. gage					Elmendorf Tear, g./sheet In Machine					Elmendorf Tear, g./sheet Cross Machine				
			Institute			Mill		Institute			Mill		Institute			Mill		Institute			Mill		Institute			Mill	
			Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.
3- 9-63	W.F.	1	42.4	41.8	42.1	42.2	+0.1	13.6	12.4	12.7	13.2	+0.5	133	85	112	114	+2	344	272	315[a]	264	-51	384	328	356[a]	352	- 4
3-14-63	W.F.	1	44.0	42.8	43.6	43.1	-0.5	13.1	12.2	12.8	13.1	+0.3	137	89	111	112	+1	352	272	299[a]	265	-34	384	312	353[a]	349	- 4
3-22-63	W.F.	1	42.0	41.2	41.6	43.0	+1.4	13.3	12.3	12.9	13.1	+0.2	138	84	111	112	+1	360	264	304[a]	250	-54	376	328	353[a]	340	-13
3-28-63	W.F.	1	43.2	42.0	42.5	42.7	+0.2	13.0	12.5	12.8	12.9	+0.1	134	77	108	114	+6	312	256	290[a]	243	-47	400	304	349[a]	331	-18
4- 5-63	W.F.	1	43.6	42.8	43.3	43.0	-0.3	13.3	12.8	13.1	13.3	+0.2	135	83	115	118	+3	352	264	297[a]	261	-36	392	304	359[a]	364	+ 5
4-11-63	W.F.	1	43.4	42.4	42.9	42.5	-0.4	13.5	12.5	13.0	13.1	+0.1	137	95	116	119	+3	360	256	307	279	-28	392	336	364[a]	355	- 9
4-19-63	W.F.	1	42.0	41.4	41.6	42.1	+0.5	13.0	12.3	12.7	13.2	+0.5	137	87	113	112	-1	336	232	292[a]	263	-29	400	296	342[a]	350	+ 8
4-27-63	W.F.	1	42.2	41.8	42.0	42.6	+0.6	13.8	12.6	13.1	13.0	-0.1	139	83	114	111	-3	328	256	294[a]	248	-46	416	344	365[a]	335	-30
5- 7-63	W.F.	1	43.6	42.4	42.9	43.3	+0.4	13.0	12.2	12.6	13.1	+0.5	130	79	109	111	+2	320	240	280	262	-18	368	304	339[a]	349	+10
5-13-63	W.F.	1	42.4	42.0	42.1	42.8	+0.7	12.7	12.0	12.4	12.9	+0.5	143	84	108	113	+5	304	248	277	241	-36	352	304	333[a]	329	- 4
Current mill average:					42.5	42.7	+0.2			12.8	13.1	+0.3			112	114	+2			296	257	-39			351	345	- 6
Cumulative mill average:					42.6					13.0					111					295					351		
Mill factor, %					99.8					98.5					100.9					100.3					100.0		
Mill index, %					99.1					100.8					102.8					90.0					93.6		

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.

TABLE V

SUMMARY OF INSTITUTE AND MILL DATA FOR MILL B

April and May, 1963

Date Made	Finish	Mch. No.	Basis Weight, lb.					Caliper, points					Bursting Strength, p.s.i. gage					Elmendorf Tear, g./sheet In Machine					Elmendorf Tear, g./sheet Cross Machine				
			Institute			Mill		Institute			Mill		Institute			Mill		Institute			Mill		Institute			Mill	
			Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.
4- 4-63	W.F.	-	43.8	43.0	43.4	43.4	0.0	13.0	12.3	12.8	12.1	-0.7	130	100	113	110	-3	320	288	307[a]	292	-15	400	328	361[a]	353	- 8
4- 5-63	W.F.	-	44.0	43.6	43.8	43.3	-0.5	12.8	11.4	11.9	11.1	-0.8	134	97	118	119	+1	352	280	313[a]	292	-21	384	320	350[a]	343	- 7
4-12-63	W.F.	-	43.6	42.8	43.2	43.0	-0.2	12.1	11.3	11.8	11.4	-0.4	128	106	116	116	0	352	272	305[a]	297	- 8	424	328	365[a]	349	-16
4-19-63	W.F.	-	42.4	41.8	42.0	41.9	-0.1	12.4	11.5	12.0	11.6	-0.4	124	95	112	112	0	352	272	311[a]	285	-26	368	312	336[a]	287	-49
5- 2-63	W.F.	-	44.0	42.8	43.7	43.1	-0.6	13.4	12.0	12.9	12.3	-0.6	137	107	123	120	-3	368	272	316	289	-27	456	320	385[a]	353	-32
5- 3-63	W.F.	-	44.0	42.8	43.6	42.7	-0.9	12.5	11.9	12.2	12.1	-0.1	135	94	120	119	-1	368	264	321[a]	292	-29	408	360	376[a]	347	-29
5-10-63	W.F.	-	44.0	42.0	43.5	43.3	-0.2	12.2	11.5	11.8	11.7	-0.1	140	103	121	119	-2	352	272	302	268	-34	384	344	359[a]	337	-22
5-17-63	W.F.	-	45.0	43.0	43.9	43.7	-0.2	12.8	11.3	12.0	11.9	-0.1	134	90	117	118	+1	400	288	340[a]	328	-12	400	352	372[a]	345	-27
Current mill average:					43.4	43.0	-0.4			12.2	11.8	-0.4			117	117	0			314	293	-21			363	339	-24
Cumulative mill average:					43.1					12.6					113					319					360		
Mill Factor, %					100.7					96.8					103.5					98.4					100.8		
Mill Index, %					101.2					96.1					107.3					95.4					96.8		

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.

TABLE VI

SUMMARY OF INSTITUTE AND MILL DATA FOR MILL C

April and May, 1963

Date Made	Finish	Mch. No.	Basis Weight, lb. Institute Max.	Min.	Av.	Mill Av.	Diff.	Caliper, points Institute Max.	Min.	Av.	Mill Av.	Diff.	Bursting Strength, p.s.i. gage Institute Max.	Min.	Av.	Mill Av.	Diff.	Elmendorf Tear, g./sheet In Machine Institute Max.	Min.	Av.	Mill Av.	Diff.	Elmendorf Tear, g./sheet Cross Machine Institute Max.	Min.	Av.	Mill Av.	Diff.
3-18-63	WF1S	2	43.0	41.8	42.5	42.3	-0.2	13.5	12.7	13.1	12.6	-0.5	125	78	104	106	+2	360	280	323	348	+25	448	336	388[a]	408	+20
3-18-63	WF1S	2	43.6	42.0	42.8	42.6	-0.2	13.6	12.7	13.1	12.9	-0.2	120	87	105	105	0	408	288	341[a]	367	+26	448	360	395[a]	421	+26
3-28-63[b]	WF1S	2	43.0	41.6	42.1	42.8	+0.7	13.9	13.1	13.4	12.9	-0.5	136	89	107	110	+3	376	304	337	334	- 3	440	344	386[a]	421	+35
4- 4-63	WF1S	2	44.0	42.8	43.4	43.2	-0.2	13.3	12.6	13.0	12.7	-0.3	140	99	115	123	+8	368	296	335[a]	354	+19	432	352	393[a]	421	+28
4-15-63	WF1S	2	44.0	42.2	43.4	43.1	-0.3	13.6	13.0	13.2	12.7	-0.5	145	92	113	120	+7	368	312	335	363	+28	432	360	393[a]	451	+58
4-15-63	WF1S	2	42.4	41.8	42.1	42.3	+0.2	13.3	12.3	12.9	12.4	-0.5	128	72	102	109	+7	368	280	329[a]	324	- 5	416	320	374[a]	424	+50
5- 8-63	----	2	44.2	42.0	42.9	42.4	-0.5	13.6	12.3	13.0	12.6	-0.4	125	90	107	108	+1	384	304	331	321	-10	424	336	383[a]	426	+43
Current mill average:					42.7	42.7	0.0			13.1	12.7	-0.4			108	112	+4			333	345	+12			387	425	+38
Cumulative mill average:					42.7					13.4					107					332					388		
Mill factor, %					100.0					97.8					100.9					100.3					99.7		
Mill index, %					99.5					103.1					99.1					101.2					103.2		

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

[b]This date appeared on the sample received by the Institute. The mill data sheet gives the date of manufacture as April 3, 1963.

Note: All "current mill average" data are calculated from the totals of the individual readings.

TABLE VII

SUMMARY OF INSTITUTE AND MILL DATA FOR MILL D

April and May, 1963

Date Made	Finish	Mch. No.	Basis Weight, lb.					Caliper, points					Bursting Strength, p.s.i. gage					Elmendorf Tear, g./sheet In Machine					Elmendorf Tear, g./sheet Cross Machine				
			Institute			Mill		Institute			Mill		Institute			Mill		Institute			Mill		Institute			Mill	
			Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.
2-23-63	W.F.	3	45.0	43.4	44.3	44.3	0.0	13.2	11.8	12.8	12.4	-0.4	141	90	113	114	+1	408	288	365[a]	327	-38	424	384	406[a]	403	- 3
2-24-63	W.F.	3	45.6	43.8	44.4	44.3	-0.1	13.3	11.8	12.7	12.5	-0.2	134	85	112	115	+3	392	328	365	334	-31	464	352	400[a]	411	+11
3- 7-63	W.F.	3	44.8	43.2	44.0	44.3	+0.3	13.8	12.8	13.0	12.5	-0.5	130	92	113	116	+3	384	312	348	362	+14	432	368	387[a]	416	+29
3- 8-63	W.F.	3	44.2	43.0	43.6	44.4	+0.8	13.3	12.2	12.9	12.6	-0.3	134	89	113	118	+5	424	312	350[a]	356	+ 6	464	368	402[a]	417	+15
3-27-63	W.F.	3	44.0	42.8	43.6	44.5	+0.9	13.2	12.2	12.7	12.2	-0.5	128	90	110	114	+4	408	272	351	334	-17	464	352	399[a]	416	+17
3-28-63	W.F.	3	44.4	42.4	43.5	43.8	+0.3	13.8	12.8	13.1	12.6	-0.5	134	104	118	117	-1	400	304	349	353	+ 4	488	352	411[a]	422	+11
Current mill average:					43.9	44.3	+0.4			12.9	12.5	-0.4			113	116	+3			355	344	-11			401	414	+13
Cumulative mill average:					43.2					12.6					111					342					393		
Mill factor, %					101.6					102.4					101.8					103.8					102.0		
Mill index, %					102.3					101.6					103.7					107.9					106.9		

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.

TABLE VIII

SUMMARY OF INSTITUTE AND MILL DATA FOR MILL E

April and May, 1963

Date Made	Finish	Mch. No.	Basis Weight, lb.					Caliper, points					Bursting Strength, p.s.i. gage					Elmendorf Tear, g./sheet In Machine					Elmendorf Tear, g./sheet Cross Machine				
			Institute			Mill		Institute			Mill		Institute			Mill		Institute			Mill		Institute			Mill	
			Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.
3- 6-63	W.F.	1	44.6	42.4	43.8	43.0	-0.8	13.6	11.6	13.0	12.7	-0.3	112	90	102	108	+6	336	256	303[a]	276	-27	384	344	359[a]	351	- 8
3-14-63	W.F.	1	44.2	42.4	43.4	43.4	0.0	13.6	12.0	12.8	12.7	-0.1	122	90	106	110	+4	360	272	322[a]	292	-30	416	336	366[a]	357	- 9
3-19-63	W.F.	1	43.8	42.0	42.6	42.0	-0.6	14.0	11.0	11.7	11.3	-0.4	128	89	106	110	+4	336	256	307[a]	275	-32	376	304	345[a]	344	- 1
4- 3-63	W.F.	1	43.6	41.0	42.3	42.2	-0.1	12.2	11.2	11.6	11.4	-0.2	118	88	103	108	+5	328	264	301[a]	296	- 5	400	328	359[a]	332	-27
4- 9-63	W.F.	1	42.6	40.6	41.7	42.0	+0.3	12.0	11.2	11.6	11.5	-0.1	126	90	107	105	-2	336	272	301[a]	282	-19	392	304	340[a]	344	+ 4
Current mill average:					42.8	42.5	-0.3			12.1	11.9	-0.2			105	108	+3			307	284	-23			354	346	- 8
Cumulative mill average:					43.4					12.3					110					299					355		
Mill factor, %					98.6					98.4					95.5					102.7					99.7		
Mill index, %					99.8					95.3					96.3					93.3					94.4		

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.

TABLE IX

SUMMARY OF INSTITUTE AND MILL DATA FOR MILL F

April and May, 1963

Date Made	Finish	Mch. No.	Basis Weight, lb.					Caliper, points					Bursting Strength, p.s.i. gage					Elmendorf Tear, g./sheet In Machine					Elmendorf Tear, g./sheet Cross Machine				
			Institute			Mill		Institute			Mill		Institute			Mill		Institute			Mill		Institute			Mill	
			Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.
4- 1-63	WFlS	2	43.6	41.8	42.8	42.8	0.0	11.9	11.1	11.5	11.6	+0.1	136	105	119	116	-3	416	288	355[a]	---	---	448	368	396[a]	---	---
4- 2-63	WFlS	1	44.0	41.2	42.6	42.5	-0.1	13.0	11.9	12.3	12.5	+0.2	139	89	111	110	-1	392	304	346[a]	---	---	408	328	368[a]	---	---
4-15-63	WFlS	2	44.8	42.0	43.0	42.7	-0.3	12.5	11.6	12.0	11.9	-0.1	132	94	111	110	-1	424	296	363[a]	---	---	424	352	399[a]	---	---
5- 6-63	----	2	44.0	42.4	43.4	42.8	-0.6	12.5	11.2	11.8	11.8	0.0	127	92	115	109	-6	416	344	382[a]	---	---	456	368	421[a]	---	---
5- 7-63	----	2	43.8	42.2	43.0	42.9	-0.1	12.8	11.5	12.1	12.0	-0.1	127	90	112	112	0	440	288	369[a]	---	---	480	400	442[a]	---	---
5-13-63	----	1	43.6	41.8	42.1	41.8	-0.3	12.9	11.7	12.3	12.1	-0.2	122	89	108	108	0	424	296	341[a]	---	---	416	336	369[a]	---	---
5-14-63	---	1	44.2	42.4	43.2	43.0	-0.2	13.0	12.0	12.4	12.1	-0.3	138	98	116	113	-3	368	296	350[a]	---	---	432	376	407[a]	---	---
Current mill average:					42.9	42.7	-0.2			12.1	12.0	-0.1			113	111	-2			358					400		
Cumulative mill average:					43.6					12.5					103					364					401		
Mill factor, %					98.4					96.8					109.7					98.4					99.8		
Mill index, %					100.0					95.3					103.7					108.8					106.7		

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.

TABLE X

SUMMARY OF INSTITUTE AND MILL DATA FOR MILL G

April and May, 1963

Date Made	Finish	Mch. No.	Basis Weight, lb.					Caliper, points					Bursting Strength, p.s.i. gage					Elmendorf Tear, g./sheet In Machine					Elmendorf Tear, g./sheet Cross Machine				
			Institute			Mill		Institute			Mill		Institute			Mill		Institute			Mill		Institute			Mill	
			Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.
3-16-63	W.B.	-	43.6	42.2	42.6	42.7	+0.1	13.2	11.8	12.4	12.2	-0.2	139	83	109	115	+6	368	296	344[a]	380	+36	480	368	416[a]	452	+36
3-19-63	W.B.	-	42.8	41.2	42.0	41.7	-0.3	13.0	11.8	12.4	12.2	-0.2	132	85	107	108	+1	440	344	375[a]	409	+34	448	360	414[a]	425	+11
4-26-63	W.B.	-	44.0	42.4	43.5	43.4	-0.1	13.5	12.0	12.9	12.4	-0.5	126	82	104	108	+4	400	344	384[a]	408	+24	480	352	411[a]	430	+19
4-26-63	W.B.	-	44.2	42.8	43.7	43.3	-0.4	13.1	11.7	12.4	12.2	-0.2	125	87	110	109	-1	432	352	385[a]	405	+20	456	384	413[a]	431	+18
5- 2-63	W.B.	-	42.4	41.8	42.1	42.1	0.0	12.7	11.7	12.2	12.1	-0.1	125	89	107	107	0	432	296	373[a]	372	- 1	456	376	413[a]	428	+15
Current mill average:					42.8	42.6	-0.2			12.4	12.2	-0.2			108	109	+1			372	395	+23			413	433	+20
Cumulative mill average:					43.4					12.7					106					371					413		
Mill factor, %					98.6					97.6					101.9					100.3					100.0		
Mill index, %					99.8					97.6					99.1					113.1					110.1		

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.

TABLE XI

SUMMARY OF INSTITUTE AND MILL DATA FOR MILL H

April and May, 1963

Date Made	Finish	Mch. No.	Basis Weight, lb.					Caliper, points					Bursting Strength, p.s.i. gage					Elmendorf Tear, g./sheet In Machine					Elmendorf Tear, g./sheet Cross Machine				
			Institute			Mill		Institute			Mill		Institute			Mill		Institute			Mill		Institute			Mill	
			Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.
3-12-63	W.B.	-	43.8	42.0	43.0	43.0	0.0	12.3	11.4	11.9	11.6	-0.3	129	80	110	113	+3	464	320	397[a]	359	-38	480	376	415[a]	423	+ 8
3-15-63	W.B.	-	42.4	40.2	41.8	42.3	+0.5	12.0	10.9	11.4	11.1	-0.3	130	91	108	112	+4	424	344	374[a]	347	-27	464	368	411[a]	424	+13
4- 2-63	W.B.	-	43.6	42.0	42.7	42.1	-0.6	11.9	11.2	11.6	11.4	-0.2	132	91	108	112	+4	384	312	344	333	-11	464	328	391[a]	393	+ 2
4-10-63	W.B.	-	43.6	42.2	42.7	42.3	-0.4	12.0	11.0	11.5	11.1	-0.4	128	74	107	112	+5	392	304	341	300	-41	424	368	400[a]	373	-27
5- 4-63	W.B.	-	44.0	42.0	43.2	42.9	-0.3	12.1	10.8	11.5	11.0	-0.5	135	89	108	110	+2	424	328	381[a]	324	-57	496	376	434[a]	420	-14
5- 6-63	W.B.	-	43.8	41.8	42.5	42.0	-0.5	11.8	10.6	11.3	10.9	-0.4	121	70	103	110	+7	456	304	376[a]	335	-41	440	368	400[a]	392	- 8
Current mill average:					42.6	42.4	-0.2			11.5	11.2	-0.3			107	112	+5			369	333	-36			408	404	- 4
Cumulative mill average:					43.0					11.8					107					360					400		
Mill factor, %					99.1					97.5					100.0					102.5					102.0		
Mill index, %					99.3					90.6					96.2					112.2					108.8		

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.

TABLE XII

SUMMARY OF INSTITUTE AND MILL DATA FOR MILL I

April and May, 1963

Date Made	Finish	Mch. No.	Basis Weight, lb.					Caliper, points					Bursting Strength, p.s.i. gage					Elmendorf Tear, g./sheet In Machine					Elmendorf Tear, g./sheet Cross Machine				
			Institute			Mill		Institute			Mill		Institute			Mill		Institute			Mill		Institute			Mill	
			Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.
3- 1-63	----	1	43.4	40.0	41.5	42.9	+1.4	13.5	12.0	12.8	12.2	-0.6	128	87	108	105	-3	368	240	293[a]	277	-16	368	304	330[a]	333	+ 3
3- 1-63	----	1	44.2	41.8	42.5	43.3	+0.8	13.5	12.0	12.6	12.1	-0.5	122	87	109	111	+2	384	264	311[a]	302	- 9	384	312	343[a]	336	- 7
3- 7-63	----	1	44.4	42.0	43.2	44.3	+1.1	13.8	12.0	12.7	12.5	-0.2	127	84	104	109	+5	344	264	306[a]	284	-22	376	304	341[a]	341	0
3- 9-63	----	1	44.0	42.0	42.7	43.6	+0.9	13.8	12.5	13.1	12.3	-0.8	133	81	110	110	0	400	264	323[a]	312	-11	400	312	359[a]	350	- 9
4- 3-63	----	1	44.6	41.6	42.8	43.6	+0.8	14.0	12.2	13.1	12.9	-0.2	135	91	110	109	-1	368	280	319[a]	304	-15	432	320	363[a]	361	- 2
4- 8-63	----	1	44.4	42.0	43.4	44.5	+1.1	14.2	12.5	13.4	13.1	-0.3	136	90	107	104	-3	400	288	339[a]	320	-19	408	344	375[a]	378	+ 3
4-20-63	----	1	46.0	42.4	43.9	44.7	+0.8	14.6	13.3	13.9	13.6	-0.3	134	73	106	109	+3	368	280	321	300	-21	480	352	389[a]	366	-23
4-22-63	----	1	44.0	41.4	42.4	43.4	+1.0	13.9	12.7	13.2	13.0	-0.2	124	87	104	106	+2	384	280	322[a]	298	-24	400	312	375[a]	364	-11
5- 2-63	----	1	43.6	40.4	41.8	42.2	+0.4	13.2	12.1	12.5	12.1	-0.4	121	85	104	102	-2	328	272	287	279	- 8	384	320	345[a]	336	- 9
5- 7-63	----	1	45.6	42.4	43.7	44.2	+0.5	14.5	13.2	13.7	13.3	-0.4	131	82	106	108	+2	368	288	327[a]	294	-33	392	304	355[a]	331	-24
Current mill average:					42.8	43.7	+0.9			13.1	12.7	-0.4			107	107	0			315	297	-18			358	350	- 8
Cumulative mill average:					43.3					13.3					105					325					360		
Mill factor, %					98.8					98.5					101.9					96.9					99.4		
Mill index, %					99.8					103.1					98.2					95.7					95.5		

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.

TABLE XIII

SUMMARY OF INSTITUTE AND MILL DATA FOR MILL J

April and May, 1963

Date Made	Finish	Mch. No.	Basis Weight, lb.					Caliper, points					Bursting Strength, p.s.i. gage					Elmendorf Tear, g./sheet In Machine					Elmendorf Tear, g./sheet Cross Machine				
			Institute			Mill		Institute			Mill		Institute			Mill		Institute			Mill		Institute			Mill	
			Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.
3-20-63	W.F.	1	43.6	41.6	42.5	43.0	+0.5	12.6	11.5	12.0	12.0	0.0	143	101	118	118	0	432	304	361	321	-40	440	384	414[a]	383	-31
3-28-63	W.F.	1	43.6	41.8	42.3	43.0	+0.7	12.6	11.8	12.1	11.9	-0.2	128	95	112	113	+1	392	320	356[a]	316	-40	384	336	357[a]	354	- 3
4- 4-63	W.F.	1	44.0	42.6	43.4	43.0	-0.4	12.2	11.4	11.8	11.6	-0.2	139	98	119	118	-1	400	296	363[a]	349	-14	432	312	383[a]	379	- 4
4-11-63	W.F.	1	44.0	42.2	43.3	43.4	+0.1	12.3	11.6	11.9	12.0	+0.1	134	85	113	117	+4	384	296	329[a]	339	+10	368	320	350[a]	373	+23
4-13-63	W.F.	1	43.8	42.0	43.0	42.9	-0.1	12.7	11.2	11.8	11.5	-0.3	134	89	113	113	0	352	288	316[a]	321	+ 5	384	336	361[a]	365	+ 4
4-26-63	W.F.	1	43.8	42.2	43.3	43.2	-0.1	12.3	11.7	12.0	11.5	-0.5	137	99	118	118	0	376	296	339[a]	324	-15	400	336	361[a]	381	+20
5- 8-63	W.F.	1	43.4	42.2	42.6	42.9	+0.3	12.6	11.7	12.1	12.0	-0.1	138	80	110	116	+6	376	264	327[a]	323	- 4	432	352	377[a]	380	+ 3
5- 4-63	W.F.	2	44.2	43.0	43.8	43.4	-0.4	12.8	11.3	12.1	11.8	-0.3	131	83	108	113	+5	368	248	311[a]	318	+ 7	400	328	367[a]	353	-14
Current mill average:					43.0	43.1	+0.1			12.0	11.8	-0.2			114	116	+2			338	326	-12			371	371	0
Cumulative mill average:					43.1					12.1					114					316					358		
Mill factor, %					99.8					99.2					100.0					107.0					103.6		
Mill index, %					100.2					94.5					104.6					102.7					98.9		

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.

TABLE XIV

SUMMARY OF INSTITUTE AND MILL DATA FOR MILL K

April and May, 1963

Date Made	Finish	Mch. No.	Basis Weight, lb.					Caliper, points					Bursting Strength, p.s.i. gage					Elmendorf Tear, g./sheet In Machine					Elmendorf Tear, g./sheet Cross Machine				
			Institute			Mill		Institute			Mill		Institute			Mill		Institute			Mill		Institute			Mill	
			Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.
3-13-63	----	1	42.4	41.2	41.7	41.2	-0.5	13.6	11.9	12.7	12.3	-0.4	118	83	100	116	+16	384	304	350[a]	274	-76	432	312	373[a]	315	-58
3-26-63	----	1	43.8	40.2	42.1	41.8	-0.3	13.8	12.3	12.8	12.3	-0.5	141	95	116	123	+ 7	472	328	373[a]	306	-67	480	368	411[a]	357	-54
4- 3-63	----	1	42.2	41.6	42.0	41.3	-0.7	13.3	11.8	12.7	12.1	-0.6	142	86	116	125	+ 9	416	344	374[a]	287	-87	448	352	405[a]	341	-64
4-26-63	----	1	43.6	41.0	42.3	42.5	+0.2	14.0	12.1	13.1	12.6	-0.5	122	88	106	123	+17	496	328	404[a]	349	-55	440	344	385[a]	363	-22
5-14-63	----	1	42.6	40.6	42.1	42.8	+0.7	13.3	11.9	12.6	12.6	0.0	123	79	101	125	+24	416	320	376[a]	327	-49	440	352	395[a]	364	-31
Current mill average:					42.0	41.9	-0.1			12.8	12.4	-0.4			107	122	+15			375	309	-66			394	348	-46
Cumulative mill average:					42.1					12.5					112					370					419		
Mill factor, %					99.8					102.4					95.5					101.4					94.0		
Mill index, %					97.9					100.8					98.2					114.0					105.1		

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.

TABLE XV

SUMMARY OF INSTITUTE AND MILL DATA FOR MILL L

April and May, 1963

Date Made	Finish	Mch. No.	Basis Weight, lb.					Caliper, points					Bursting Strength, p.s.i. gage					Elmendorf Tear, g./sheet In Machine					Elmendorf Tear, g./sheet Cross Machine				
			Institute			Mill		Institute			Mill		Institute			Mill		Institute			Mill		Institute			Mill	
			Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.
3-21-63	WFlS	1	42.0	41.0	41.5	42.2	+0.7	13.3	12.3	12.8	12.7	-0.1	126	87	110	115	+5	360	232	286[a]	275	-11	368	304	325[a]	350	+25
3-21-63	WFlS	1	42.0	40.8	41.5	41.9	+0.4	13.0	12.2	12.7	12.6	-0.1	132	97	111	117	+6	304	208	272[a]	301	+29	368	296	315[a]	357	+42
3-28-63	WFlS	1	41.8	40.0	41.0	42.3	+1.3	13.1	12.4	12.8	12.4	-0.4	122	99	112	120	+8	312	232	247	255	+ 8	320	288	309[a]	320	+11
3-27-63	WFlS	1	43.4	42.0	42.7	42.7	0.0	13.3	12.4	13.0	12.9	-0.1	123	100	113	116	+3	296	240	267[a]	288	+21	352	288	317[a]	362	+45
4-23-63	WFlS	1	44.0	42.8	43.8	43.0	-0.8	14.1	13.0	13.5	13.3	-0.2	132	100	117	118	+1	360	248	302[a]	306	+ 4	376	320	347[a]	369	+22
4-23-63	WFlS	1	43.2	42.0	42.4	42.5	+0.1	14.0	13.0	13.5	13.2	-0.3	135	94	113	115	+2	360	240	289[a]	305	+16	416	328	359[a]	390	+31
5- 2-63	WFlS	1	42.4	42.0	42.1	42.1	0.0	13.3	12.3	13.0	12.6	-0.4	133	94	117	121	+4	320	232	281[a]	261	-20	376	312	338[a]	359	+21
5- 3-63	WFlS	1	43.0	42.0	42.4	42.3	-0.1	13.5	12.1	12.7	12.5	-0.2	128	95	114	118	+4	320	224	274[a]	254	-20	376	280	321[a]	325	+ 4
5- 4-63	WFlS	1	42.8	41.8	42.2	42.4	+0.2	13.2	12.0	12.9	12.5	-0.4	131	89	117	119	+2	328	264	291	282	- 9	368	312	337[a]	367	+30
Current mill average:					42.2	42.4	+0.2			13.0	12.7	-0.3			114	118	+4			279	281	+ 2			330	355	+25
Cumulative mill average:					42.2					13.4					111					269					330		
Mill factor, %					100.0					97.0					102.7					103.7					100.0		
Mill index, %					96.4					102.4					104.6					84.8					88.0		

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.

TABLE XVI

SUMMARY OF INSTITUTE AND MILL DATA FOR MILL M

April and May, 1963

Date Made	Finish	Mch. No.	Basis Weight, lb.					Caliper, points					Bursting Strength, p.s.i. gage					Elmendorf Tear, g./sheet In Machine					Elmendorf Tear, g./sheet Cross Machine				
			Institute			Mill		Institute			Mill		Institute			Mill		Institute			Mill		Institute			Mill	
			Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.
3-26-63	S.F.	7	43.0	40.0	41.6	41.9	+0.3	13.2	12.0	12.4	12.4	0.0	134	76	103	107	+4	456	272	356[a]	358	+ 2	432	344	385[a]	396	+11
4- 2-63	S.F.	7	42.2	38.2	41.0	41.3	+0.3	12.3	11.1	11.7	11.5	-0.2	133	77	105	108	+3	384	296	339	370	+31	424	336	388[a]	409	+21
4-24-63	S.F.	7	44.0	41.6	42.4	42.5	+0.1	14.0	12.2	13.2	13.2	0.0	117	68	93	96	+3	384	272	331[a]	376	+45	408	320	357[a]	411	+54
5-17-63	S.F.	7	44.2	41.6	43.2	44.0	+0.8	13.2	11.9	12.8	12.8	0.0	127	88	106	101	-5	352	288	319	363	+44	432	352	375[a]	392	+17
Current mill average:					42.0	42.4	+0.4			12.5	12.5	0.0			102	103	+1			336	367	+31			376	402	+26
Cumulative mill average:					42.2					12.4					100					341					383		
Mill factor, %					99.5					100.8					102.0					98.5					98.2		
Mill index, %					97.9					98.4					93.6					102.1					100.3		

TABLE XVII

SUMMARY OF INSTITUTE AND MILL DATA FOR MILL N

No samples submitted.

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.

TABLE XVIII

SUMMARY OF INSTITUTE AND MILL DATA FOR MILL O

April and May, 1963

Date Made	Finish	Mch. No.	Basis Weight, lb. Institute Max.	Institute Min.	Institute Av.	Mill Av.	Diff.	Caliper, points Institute Max.	Institute Min.	Institute Av.	Mill Av.	Diff.	Bursting Strength, p.s.i. gage Institute Max.	Institute Min.	Institute Av.	Mill Av.	Diff.	Elmendorf Tear, g./sheet In Machine Institute Max.	Institute Min.	Institute Av.	Mill Av.	Diff.	Elmendorf Tear, g./sheet Cross Machine Institute Max.	Institute Min.	Institute Av.	Mill Av.	Diff.
4- 1-63	W.F.	2	44.4	42.2	43.4	43.7	+0.3	13.7	12.5	13.1	13.1	0.0	134	81	111	114	+3	432	328	378[a]	339	-39	456	392	415[a]	410	- 5
4- 1-63	W.F.	2	44.4	42.0	43.4	43.7	+0.3	13.7	12.6	13.1	13.0	-0.1	128	83	111	116	+5	376	396	333[a]	338	+ 5	472	376	411[a]	407	- 4
4- 5-63	W.F.	2	42.4	42.0	42.2	42.3	+0.1	13.4	12.7	13.1	12.9	-0.2	138	85	117	119	+2	376	296	336[a]	321	-15	424	328	371[a]	391	+20
4- 5-63	W.F.	2	43.2	41.8	42.2	42.2	0.0	13.6	12.6	13.1	12.8	-0.3	136	101	117	118	+1	376	304	340	324	-16	424	336	375[a]	380	+ 5
4-28-63	W.F.	2	43.6	42.0	42.7	42.6	-0.1	13.5	12.6	13.0	13.0	0.0	140	88	111	112	+1	384	296	329	326	- 3	448	360	382[a]	394	+12
4-28-63	W.F.	2	43.6	41.8	42.8	42.5	-0.3	13.4	12.6	13.0	13.1	+0.1	142	89	108	111	+3	376	280	325[a]	307	-18	432	360	389[a]	380	- 9
4-29-63	W.F.	2	43.2	42.0	42.6	42.6	0.0	13.5	12.5	12.9	13.0	+0.1	135	86	110	111	+1	368	296	327[a]	310	-17	432	352	381[a]	392	+11
5- 2-63	W.F.	2	43.6	42.4	42.8	42.7	-0.1	13.4	12.5	12.9	12.8	-0.1	136	89	113	116	+3	360	288	326	312	-14	496	360	414[a]	407	- 7
Current mill average:					42.8	42.8	0.0			13.0	13.0	0.0			112	115	+3			337	322	-15			392	395	+ 3
Cumulative mill average:					43.1					12.7					111					328					386		
Mill factor, %					99.3					102.4					100.9					102.7					101.6		
Mill index, %					99.8					102.4					102.8					102.4					104.5		

TABLE XIX

SUMMARY OF INSTITUTE AND MILL DATA FOR MILL P

No samples submitted.

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.

TABLE XX

SUMMARY OF INSTITUTE AND MILL DATA FOR MILL Q

April and May, 1963

Date Made	Finish	Mch. No.	Basis Weight, lb. Institute Max.	Min.	Av.	Mill Av.	Diff.	Caliper, points Institute Max.	Min.	Av.	Mill Av.	Diff.	Bursting Strength, p.s.i. gage Institute Max.	Min.	Av.	Mill Av.	Diff.	Elmendorf Tear, g./sheet In Machine Institute Max.	Min.	Av.	Mill Av.	Diff.	Elmendorf Tear, g./sheet Cross Machine Institute Max.	Min.	Av.	Mill Av.	Diff.
No samples submitted.																											

TABLE XXI

SUMMARY OF INSTITUTE AND MILL DATA FOR MILL S

3-28-63	WFlS	2	42.0	40.4	41.2	42.0	+0.8	13.7	12.4	13.2	13.0	-0.2	143	84	108	105	-3	320	224	274	270	- 4	368	304	331[a]	357	+26
4- 1-63	WFlS	2	43.0	42.0	42.4	43.3	+0.9	14.0	12.5	13.4	13.3	-0.1	142	88	114	113	-1	360	256	295	298	+ 3	376	336	355[a]	386	+31
4-12-63	WFlS	2	44.2	43.0	43.8	44.2	+0.4	14.4	13.2	14.0	13.7	-0.3	138	88	111	108	-3	352	280	320[a]	320	0	416	320	368[a]	400	+32
4-19-63	WFlS	2	44.0	43.0	43.7	44.3	+0.6	14.3	13.0	13.6	13.3	-0.3	153	91	118	111	-7	368	296	331	355	+24	400	352	377[a]	428	+51
5- 9-63	WFlS	2	43.4	42.0	42.5	43.3	+0.8	14.2	12.8	13.7	13.3	-0.4	138	93	115	114	-1	344	288	313[a]	274	-39	432	312	357[a]	366	+ 9
5- 1-63	WFlS	2	44.0	42.2	42.8	43.3	+0.5	15.5	13.9	14.3	13.8	-0.5	138	84	113	112	-1	344	240	272[a]	284	+12	376	304	345[a]	381	+32
Current mill average:					42.7	43.4	+0.7			13.7	13.4	-0.3			113	110	-3			301	300	- 1			356	386	+30
Cumulative mill average:					42.6					13.3					114					310					358		
Mill factor, %					100.2					103.0					99.1					97.1					99.4		
Mill index, %					99.5					107.9					103.7					91.5					94.9		

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.

TABLE XXII

SUMMARY OF INSTITUTE AND MILL DATA FOR MILL T

April and May, 1963

Date Made	Finish	Mch. No.	Basis Weight, lb.					Caliper, points					Bursting Strength, p.s.i. gage					Elmendorf Tear, g./sheet In Machine					Elmendorf Tear, g./sheet Cross Machine				
			Institute			Mill		Institute			Mill		Institute			Mill		Institute			Mill		Institute			Mill	
			Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.
3- 5-63	WF1S	1	43.6	42.0	42.9	43.2	+0.3	14.1	12.8	13.2	12.9	-0.3	129	102	117	113	- 4	384	288	331[a]	290	-41	384	328	355[a]	322	-33
3-14-63	WF1S	1	43.6	42.4	43.0	43.5	+0.5	13.6	12.8	13.2	13.0	-0.2	138	103	120	114	- 6	368	304	327[a]	333	+ 6	384	344	363[a]	364	+ 1
3-20-63	WF1S	1	44.0	43.2	43.8	43.5	-0.3	14.2	13.0	13.3	12.9	-0.4	134	109	120	116	- 4	376	280	320[a]	270	-50	384	320	353[a]	335	-18
3-26-63	WF1S	1	44.0	43.4	43.8	43.4	-0.4	14.2	12.8	13.3	12.7	-0.6	139	88	120	114	- 6	368	288	327	301	-26	400	336	366[a]	351	-15
4-10-63	WF1S	1	44.2	43.8	43.9	43.1	-0.8	14.6	13.3	14.0	13.1	-0.9	126	74	101	111	+10	400	304	357[a]	324	-33	416	336	368[a]	368	0
4-12-63	WF1S	1	44.0	42.8	43.6	43.2	-0.4	14.4	13.2	13.8	13.5	-0.3	127	77	104	107	+ 3	432	296	334[a]	312	-22	432	336	381[a]	360	-21
Current mill average:					43.5	43.3	-0.2			13.5	13.0	-0.5			114	112	- 2			333	305	-28			364	350	-14
Cumulative mill average:					42.3					12.7					108					328					376		
Mill factor, %					102.8					106.3					105.6					101.5					96.8		
Mill index, %					101.4					106.3					104.6					101.2					97.1		

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.

TABLE XXIII

SUMMARY OF INSTITUTE AND MILL DATA FOR MILL U

April and May, 1963

Date Made	Finish	Mch. No.	Basis Weight, lb.					Caliper, points					Bursting Strength, o.s.i. gage					Elmendorf Tear, g./sheet In Machine					Elmendorf Tear, g./sheet Cross Machine				
			Institute			Mill		Institute			Mill		Institute			Mill		Institute			Mill		Institute			Mill	
			Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.
3-20-63	W.F.	1	43.0	42.0	42.4	42.7	+0.3	12.5	11.9	12.2	12.1	-0.1	128	91	107	111	-4	344	272	308[a]	273	-35	408	320	370[a]	357	-13
3-21-63	W.F.	1	42.6	41.6	42.0	42.4	+0.4	12.7	11.3	12.2	12.1	-0.1	126	83	106	106	0	408	280	311[a]	275	-36	440	336	377[a]	376	- 1
3-22-63	W.F.	1	43.6	42.0	43.0	43.0	0.0	12.7	11.6	12.2	12.1	-0.1	130	86	110	107	-3	352	264	308[a]	280	-28	408	344	377[a]	381	+ 4
3-25-63	W.F.	1	44.0	42.0	43.1	43.1	0.0	12.8	11.9	12.3	12.2	-0.1	132	90	111	110	-1	320	240	289[a]	269	-20	384	320	354[a]	364	+10
4- 4-63	W.F.	1	42.4	41.4	41.9	42.0	+0.1	12.9	11.9	12.4	12.4	0.0	127	87	104	108	+4	376	264	319	289	-30	416	336	378[a]	379	+ 1
4- 6-63	W.F.	1	44.0	41.6	42.7	42.7	0.0	12.7	11.9	12.2	12.2	0.0	115	96	106	109	+3	360	264	295	266	-29	400	288	347[a]	354	+ 7
4- 8-63	W.F.	1	43.4	42.0	42.4	42.6	-0.2	12.6	11.7	12.1	12.0	-0.1	120	67	107	112	+5	368	288	317[a]	290	-27	400	328	363[a]	386	+23
4-10-63	W.F.	1	43.6	42.0	42.5	42.4	-0.1	12.7	11.3	11.9	12.0	+0.1	122	77	102	107	+5	384	280	320[a]	300	-20	400	320	359[a]	356	- 3
4-16-63	W.F.	1	42.8	42.0	42.3	42.7	+0.4	12.8	11.4	12.2	12.0	-0.2	115	88	106	108	+2	352	272	306[a]	288	-18	384	312	354[a]	364	+10
4-19-63	W.F.	1	42.4	41.8	42.1	42.4	+0.3	12.7	11.7	12.2	12.0	-0.2	123	86	103	108	+5	400	272	325[a]	282	-43	400	336	363[a]	373	+10
4-22-63	W.F.	1	42.0	40.8	41.7	41.5	-0.2	12.4	11.4	12.0	11.7	-0.3	119	89	103	106	+3	360	256	303[a]	274	-29	368	304	335[a]	353	+18
4-30-63	W.F.	1	42.6	41.8	42.0	42.0	0.0	12.4	10.8	11.7	11.4	-0.3	121	78	105	110	+5	320	256	291[a]	278	-13	368	312	341[a]	375	+34
5- 2-63	W.F.	1	43.8	41.8	42.7	+3.0	+0.3	13.1	12.0	12.5	12.1	-0.4	141	69	115	114	-1	368	256	310	291	-19	448	336	387[a]	385	- 2
5- 4-63	W.F.	1	42.2	40.4	41.5	41.9	+0.4	12.2	11.2	11.9	11.5	-0.4	119	91	104	107	+3	352	264	304[a]	283	-21	368	320	343[a]	347	+ 4
5- 7-63	W.F.	1	43.6	41.6	42.4	42.6	+0.2	13.9	12.0	12.5	12.2	-0.3	129	85	107	109	+2	352	272	317[a]	276	-41	376	312	342[a]	346	+ 4
5-10-63	W.F.	1	43.0	41.6	42.4	42.8	+0.4	13.1	12.0	12.6	12.3	-0.3	124	90	104	106	+2	360	264	311[a]	296	-15	400	328	370[a]	369	- 1
Current mill average:					42.3	42.5	+0.2			12.2	12.0	-0.2			106	109	+3			308	282	-26			360	367	+ 7
Cumulative mill average:					42.6					12.4					107					302					359		
Mill factor, %					99.3					98.4					99.1					102.0					100.3		
Mill index, %					98.6					96.1					97.2					93.6					96.0		

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.

TABLE XXIV

SUMMARY OF INSTITUTE AND MILL DATA FOR MILL V

April and May, 1963

Date Made	Finish	Mch. No.	Basis Weight, lb. Institute Max.	Min.	Av.	Mill Av.	Diff.	Caliper, points Institute Max.	Min.	Av.	Mill Av.	Diff.	Bursting Strength, p.s.i. gage Institute Max.	Min.	Av.	Mill Av.	Diff.	Elmendorf Tear, g./sheet In Machine Institute Max.	Min.	Av.	Mill Av.	Diff.	Elmendorf Tear, g./sheet Cross Machine Institute Max.	Min.	Av.	Mill Av.	Diff.
-26-63	WFlS	1	43.6	42.0	42.8	42.9	+0.1	13.4	12.0	12.8	12.6	-0.2	127	88	107	108	+1	424	280	357[a]	313	-44	416	352	382[a]	386	+ 4
- 3-63	WFlS	1	43.8	41.2	42.2	43.5	+1.3	13.1	12.0	12.6	12.5	-0.1	134	90	112	112	0	384	280	323	286	-37	432	368	387[a]	389	+ 2
-16-63	WFlS	1	44.0	42.0	43.0	42.1	-0.9	14.0	11.9	12.9	12.4	-0.5	122	67	103	106	+3	360	232	319[a]	337	+18	456	336	385[a]	414	+29
- 1-63	WFlS	1	44.0	42.2	43.3	43.1	-0.2	13.6	12.1	12.9	12.6	-0.3	134	84	112	110	-2	368	272	325	317	- 8	432	328	385[a]	389	+ 4
- 7-63	WFlS	1	44.0	42.2	43.0	43.5	+0.5	13.6	12.0	12.6	12.6	0.0	130	88	110	109	-1	384	272	334[a]	344	+10	432	360	387[a]	407	+20
-16-63	WFlS	1	44.2	42.2	43.1	42.8	-0.3	13.1	12.0	12.6	12.5	-0.1	137	95	113	107	-6	384	280	332	345	+13	496	352	397[a]	427	+30
urrent mill average:					42.9	43.0	+0.1			12.7	12.5	-0.2			110	109	-1			332	324	- 8			387	402	+15
mulative mill average:					42.8					12.7					105					308					376		
ill factor, %					100.2					100.0					104.8					107.8					102.9		
ill index, %					100.0					100.0					100.9					100.9					103.2		

his average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

te: All "current mill average" data are calculated from the totals of the individual readings.

TABLE XXV

SUMMARY OF INSTITUTE AND MILL DATA FOR MILL W

April and May, 1963

Date Made	Finish	Mch. No.	Basis Weight, lb. Institute Max.	Min.	Av.	Mill Av.	Diff.	Caliper, points Institute Max.	Min.	Av.	Mill Av.	Diff.	Bursting Strength, p.s.i. gage Institute Max.	Min.	Av.	Mill Av.	Diff.	Elmendorf Tear, g./sheet In Machine Institute Max.	Min.	Av.	Mill Av.	Diff.	Elmendorf Tear, g./sheet Cross Machine Institute Max.	Min.	Av.	Mill Av.	Diff.
3- 9-63	W.F.	-	43.0	41.8	42.2	43.7	+1.5	13.7	12.4	13.1	13.2	+0.1	127	79	105	102	-3	400	336	367[a]	353	-14	464	344	402[a]	405	+ 3
3- 9-63	W.F.	-	43.0	41.8	42.4	43.1	+0.7	13.6	12.0	12.8	13.0	+0.2	128	83	106	104	-2	424	320	373[a]	340	-33	480	336	394[a]	400	+ 6
4-11-63	W.F.	-	44.0	43.0	43.7	42.8	-0.9	14.7	12.3	13.3	12.5	-0.8	132	84	110	107	-3	432	328	374[a]	357	-17	416	360	385[a]	404	+19
4-11-63	W.F.	-	44.0	42.2	43.1	43.3	+0.2	13.7	12.2	12.9	12.8	-0.1	131	91	111	110	-1	416	320	362[a]	325	-37	424	336	385[a]	391	+ 6
Current mill average:					42.9	43.3	+0.4			13.0	12.9	-0.1			108	106	-2			369	344	-25			392	400	+ 8
Cumulative mill average:					42.6					12.3					110					346					364		
Mill factor, %					100.7					105.7					98.2					106.6					107.7		
Mill index, %					100.0					102.4					99.1					112.2					104.5		

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.

and mill data described above, Tables IV through XXV also include under each test heading a column labeled "Diff." This column shows the differences between averages obtained at the Institute and those obtained at the mills. The data obtained at the Institute are used as the reference in calculating these differences.

The average test results obtained at the Institute and at the mills are summarized in Table XXVI for the current period. Shown in this table for each mill is the difference for each test between the current mill average based on Institute data and the current mill average based on mill data. In addition, for each test the maximum difference encountered in comparing Institute and mill averages for individual sample lots is shown. In Table XXVII, the differences for each test between the current mill averages based on Institute data and those based on mill data shown in Table XXVI have been converted to per cent (based on Institute data as a reference). In addition, for purposes of comparison, the percentage differences from the previous bimonthly report are shown.

A summary of the agreement obtained in the comparisons of Institute and mill test data for the current period is shown in Table XXVIII. This summary is based on the results given in Table XXVII. The tabulated data show the number of mills, and the percentage of all mills which this number represents, whose average test results for the current period fall within designated percentages from the average test results obtained at the Institute. It may be noted from this summary that agreement between the results obtained at the Institute and those obtained at the mills was generally very good.

Preconditioning and conditioning data pertinent to the test results obtained at the mills during the current period are given in Table XXIX.

TABLE XXVI

SUMMARY OF TEST RESULT COMPARISONS (AVERAGE MILL AND INSTITUTE RESULTS)

Mills[a]	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	S	T	U	V	W
No. of samples compared	10	8	7	6	5	7	5	6	10	8	5	9	4	0	8	0	0	6	6	16	6	4
Basis Weight																						
Institute	42.5	43.4	42.7	43.9	42.8	42.9	42.8	42.6	42.8	43.0	42.0	42.2	42.0		42.8			42.7	43.5	42.3	42.9	42.9
Mill	42.7	43.0	42.7	44.3	42.5	42.7	42.6	42.4	43.7	43.1	41.9	42.4	42.4		42.8			43.4	43.3	42.5	43.0	43.3
Av. diff.[b]	+0.2	-0.4	0.0	+0.4	-0.3	-0.2	-0.2	-0.2	+0.9	+0.1	-0.1	+0.2	+0.4		0.0			+0.7	-0.2	+0.2	+0.1	+0.4
Max. diff.[c]	+1.4	-0.9	+0.7	+0.9	-0.8	-0.6	-0.4	-0.6	+1.4	+0.7	±0.7	+1.3	+0.8		±0.3			+0.9	-0.8	+0.4	+1.3	+1.5
Caliper																						
Institute	12.8	12.2	13.1	12.9	12.1	12.1	12.4	11.5	13.1	12.0	12.8	13.0	12.5		13.0			13.7	13.5	12.2	12.7	13.0
Mill	13.1	11.8	12.7	12.5	11.9	12.0	12.2	11.2	12.7	11.8	12.4	12.7	12.5		13.0			13.4	13.0	12.0	12.5	12.9
Av. diff.[b]	+0.3	-0.4	-0.4	-0.4	-0.2	-0.1	-0.2	-0.3	-0.4	-0.2	-0.4	-0.3	0.0		0.0			-0.3	-0.5	-0.2	-0.2	-0.1
Max. diff.[c]	+0.5	-0.8	-0.5	-0.5	-0.4	-0.3	-0.5	-0.5	-0.8	-0.5	-0.6	-0.4	-0.2		-0.3			-0.5	-0.9	-0.4	-0.5	-0.8
Bursting Strength																						
Institute	112	117	108	113	105	113	108	107	107	114	107	114	102		112			113	114	106	110	108
Mill	114	117	112	116	108	111	109	112	107	116	122	118	103		115			110	112	109	109	106
Av. diff.[b]	+2	0	+4	+3	+3	-2	+1	+5	0	+2	+15	+4	+1		+3			-3	-2	+3	-1	-2
Max. diff.[c]	+6	-3	+8	+5	+6	-6	+6	+7	+5	+6	+24	+8	-5		+5			-7	+10	+5	-6	-3
Tearing Strength, in																						
Institute	296	314	333	355	307	358	372	369	315	338	375	279	336		337			301	333	308	332	369
Mill	257	293	345	344	284	-	395	333	297	326	309	281	367		322			300	305	282	324	344
Av. diff.[b]	-39	-21	+12	-11	-23	-	+23	-36	-18	-12	-66	+2	+31		-15			-1	-28	-26	-8	-25
Max. diff.[c]	-54	-34	+28	-38	-32	-	+36	-57	-33	-40	-87	+29	+45		-39			-39	-50	-43	-44	-37
Tearing Strength, cross																						
Institute	351	363	387	401	354	400	413	408	358	371	394	330	376		392			356	364	360	387	392
Mill	345	339	425	414	346	-	433	404	350	371	348	355	402		395			386	350	367	402	400
Av. diff.[b]	-6	-24	+38	+13	-8	-	+20	-4	-8	0	-46	+25	+26		+3			+30	-14	+7	+15	+8
Max. diff.[c]	-30	-49	+58	+29	-27	-	+36	-27	-24	-31	-64	+45	+54		+20			+51	-33	+34	+30	+19

[a] Comparison based on averages involved only those samples on which mill test data were submitted.
[b] Average difference is the difference between the Institute mill average and the mill average based on mill test data.
[c] Maximum difference encountered in comparing the Institute average and the mill averages for any sample submitted by that particular mill.

TABLE XXVII

COMPARISON OF INSTITUTE-MILL DIFFERENCES FOR APRIL AND MAY, 1963
(Average Difference, per cent)

Mill	Period	Basis Weight	Caliper	Bursting Strength	Tear, in	Tear, cross	Mill	Period	Basis Weight	Caliper	Bursting Strength	Tear, in	Tear, cross
A	Dec.-Jan.	+0.2	+0.8	+4	-12	-3	L	Dec.-Jan.	-0.7	-4	-3	+5	+6
	Feb.-Mar.	-0.5	+0.8	+0.9	-12	-3		Feb.-Mar.	-0.7	-5	+2	0	+5
	Current	+0.5	+2	+2	-13	-2		Current	+0.5	-2	+4	+0.7	+8
B	Dec.-Jan.	-0.2	-3	-2	-7	-5	M	Dec.-Jan.	+0.5	+0.8	-0.9	+0.9	+3
	Feb.-Mar.	0	-2	-2	-5	-7		Feb.-Mar.	+2	+0.8	+3	+3	+1
	Current	-0.9	-3	0	-7	-7		Current	+1	0	+1	+9	+7
C	Dec.-Jan.	+0.7	-3	+2	+9	+16	N	Dec.-Jan.	--	--	--	--	--
	Feb.-Mar.	-0.7	-0.7	+5	+0.8	+10		Feb.-Mar.	--	--	--	--	--
	Current	0	-3	+4	+4	+10		Current	--	--	--	--	--
D	Dec.-Jan.	+2	-2	0	+0.3	+5	O	Dec.-Jan.	+0.2	+0.8	0	-4	+3
	Feb.-Mar.	+1	-2	+0.9	+0.9	+5		Feb.-Mar.	-0.7	-0.8	-0.9	-2	+0.3
	Current	+0.9	-3	+3	-3	+3		Current	0	0	+3	-4	+0.8
E	Dec.-Jan.	-2	-2	+0.9	-1	+0.8	P	Dec.-Jan.	--	--	--	--	--
	Feb.-Mar.	-2	-2	+3	-4	+3		Feb.-Mar.	--	--	--	--	--
	Current	-0.7	-2	+3	-7	-2		Current	--	--	--	--	--
F	Dec.-Jan.	-1	-0.8	+6	--	--	Q	Dec.-Jan.	0	-2	-0.9	-11	-4
	Feb.-Mar.	+0.7	0	+2	--	--		Feb.-Mar.	-0.5	-4	-1	-12	-4
	Current	-0.5	-0.8	-2	--	--		Current	--	--	--	--	--
G	Dec.-Jan.	-0.5	-2	+3	+18	+1	S	Dec.-Jan.	+1	-2	-3	-1	+6
	Feb.-Mar.	-0.5	0	+0.9	+16	+9		Feb.-Mar.	+0.5	-4	-2	-2	+4
	Current	-0.5	-2	+0.9	+6	+5		Current	+2	-2	-3	-0.3	+8
H	Dec.-Jan.	-2	-5	+2	-18	-4	T	Dec.-Jan.	0	-4	+2	-7	-5
	Feb.-Mar.	-0.2	-3	+0.9	-4	+5		Feb.-Mar.	-0.2	-5	0	-6	-2
	Current	-0.5	-3	+5	-10	-1		Current	-0.5	-4	-2	-8	-4
I	Dec.-Jan.	+0.2	-2	+1	-6	+2	U	Dec.-Jan.	+0.5	-0.8	+3	-7	+2
	Feb.-Mar.	+0.7	-2	-2	-8	-3		Feb.-Mar.	+0.7	-2	+3	-12	-0.6
	Current	+2	-3	0	-6	-2		Current	+0.5	-2	+3	-8	+2
J	Dec.-Jan.	+0.7	-2	0	+6	+4	V	Dec.-Jan.	0	-2	+3	+8	+9
	Feb.-Mar.	-0.9	-3	+3	-6	-6		Feb.-Mar.	-0.7	-2	+4	+12	+4
	Current	+0.2	-2	+2	-4	0		Current	+0.2	-2	-0.9	-2	+4
K	Dec.-Jan.	--	--	--	--	--	W	Dec.-Jan.	+0.2	+0.8	-4	-5	0
	Feb.-Mar.	+0.5	-2	+7	-14	-11		Feb.-Mar.	0	+0.8	-3	-8	+1
	Current	-0.2	-3	+14	-18	-12		Current	+0.9	-0.8	-2	-7	+2

TABLE XXVIII

SUMMARY OF AGREEMENT BETWEEN INSTITUTE AND MILL RESULTS

April and May, 1963

	Average Percentage Difference Between Institute and Mill Test Results										
	±0.5	±1	±2	±3	±4	±5	±7.5	±10	±12	±14	±18
Basis weight											
Number of mills	12	17	19								
Percentage of all mills	63.2	89.5	100.0								
Caliper											
Number of mills	2	4	12	18	19						
Percentage of all mills	10.5	21.1	63.2	94.7	100.0						
Bursting strength											
Number of mills	2	5	10	15	17	18	18	18	18	19	
Percentage of all mills	10.5	26.3	52.6	78.9	89.5	94.7	94.7	94.7	94.7	100.0	
Tearing strength, in											
Number of mills	1	2	3	4	7	7	12	16	16	17	18
Percentage of all mills	5.6	11.1	16.7	22.2	38.9	38.9	66.7	88.9	88.9	94.4	100.0
Tearing strength, cross											
Number of mills	1	3	8	9	11	12	14	17	18		
Percentage of all mills	5.6	16.7	44.4	50.0	61.1	66.7	77.8	94.4	100.0		

TABLE XXIX

PRECONDITIONING AND CONDITIONING DATA FOR MILL TESTS

April and May, 1963

Mill Code	Preconditioning			Conditioning		
	R.H., %	Temp., °F.	Time, hr.	R.H., %	Temp., °F.	Time, hr.
A		None		45-74	68-91	--
B	33-36	76-78	8	48-52	71-73	
C	50	72	120	50	72	120-192
D		None		50	73	24
E	32-51	58-75	0.5	50	73	24
F		None		50	73	24
G		None		50	73	48
H		None		45-51	73-74	48
I	50	72-74	48-720	50	72-74	3
J		None		50	73	24
K	50	72-73	24-192		None	
L	50	73	72-120	50	73	72-120
M	50	73	24		None	
N	No samples submitted					
O	50	73	24	50	73	24
P	No samples submitted					
Q	No samples submitted					
S	50	72	24		None	
T	50	70-72	24	50	72	--
U	35	73	24	50	73	48
V		None		55-56	70-72	--
W		None		50	73	24

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